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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/720,693	10/02/96	KA0	D 11675.107

022901  
BRADLEY K DESANDRO  
1000 EAGLE GATE TOWER  
60 EAST SOUTH TEMPLE  
SALT LAKE CITY UT 84111

MMC2/1025

EXAMINER

FOURSON III, G

ART UNIT

PAPER NUMBER

2823

DATE MAILED:

10/25/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

**Office Action Summary**Application No.  
**08/720,693**Applicant(s)  
**Kao et al**Examiner  
**George Fourson**Group Art Unit  
**2823**☒ Responsive to communication(s) filed on Jul 10, 2000☒ This action is **FINAL**.☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**☒ Claim(s) 1-44 is/are pending in the application.Of the above, claim(s) 34-44 is/are withdrawn from consideration.☐ Claim(s) \_\_\_\_\_ is/are allowed.☒ Claim(s) 1-33 is/are rejected.☐ Claim(s) \_\_\_\_\_ is/are objected to.☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.**Application Papers**☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.☐ The specification is objected to by the Examiner.☐ The oath or declaration is objected to by the Examiner.**Priority under 35 U.S.C. § 119**☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).**Attachment(s)**☒ Notice of References Cited, PTO-892☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_☐ Interview Summary, PTO-413☐ Notice of Draftsperson's Patent Drawing Review, PTO-948☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Newly submitted claims 43 and 44 are drawn to the nonelected species.

Claims 1-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, for example, the use of "predetermined" is seen to be merely a label synonymous with "first", for example. If any other significance is intended it must be clearly recited. Otherwise, the claims are free of rejection under 35 U.S.C § 112, paragraph 2, for this reason.

In claim 2, it is questioned what is recited through use of "type".

The insertion of "minimum" in claims 10,25 and 33 raises confusion as to the range intended. It appears that the minimum distance could be expressed by a single value.

In claim 2, it appears that --further comprising-- language should be employed to indicate that the step recited is in addition to those of claim 1.

Claims 2-4 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no description in the specification as originally filed of implanting more than one "type" of ion as recited.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior

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Office action.

Claims 1-6,11,13,14,15,16,17,20,21,24,26,29,30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 62-48028 in view of Wolf, Vol.1, pp.323 and 324 .

Japan '028 is applied as stated in the paper mailed 4/12/2000.

The reference does not disclose implanting into exposed substrate but instead implants through an oxide layer.

Wolf, Vol.1, discloses the effects of implantation through surface layers such as a thin oxide layer (pp.323-324). It would have been within the scope of one of ordinary skill in the art to remove the oxide layer of Japan '028 in the event that the effects disclosed by Wolf are not desired to be obtained in view of the disclosure of Japan '028 figures 2A-2D that field oxide formation is suitably performed after removal of the pad oxide layer 2a in the field region.

Claims 7,8,9,10,22,23 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan '028 in view of Wolf, Vol.1, pp.323 and 324 as applied to claims 1-6,11,13,14,15,16, 17,20,21,24, 26, 29, 30 and 31 above, and further in view of Japanese Patent 63-300526.

Japan '028 discloses use of photoresist as the spacer material as opposed to silicon nitride. The use of silicon nitride in the process of spacing an implanted region from the edge of an oxidation mask is disclosed by Japanese Patent '526. It would have been within the scope of one of ordinary skill in the art to employ silicon nitride as the spacer material in the process of Japanese Patent '028 to allow spacing of the

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implanted silicon ions from the edges of the mask opening.

Claims 12,18,19,24,25,27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent '028 in view of Wolf, Vol.1, pp.323 and 324 as applied to claims 1-6,11,13,14,15, 16,17, 20, 21, 24,26,29,30 and 31 above, and further in view of the following comments.

Japanese Patent '028 discloses removal of the photoresist mask prior to the bombarding. However, It would have been within the scope of one of ordinary skill in the art to allow the mask to remain under the second photoresist mask in view of the disclosure that photoresist masks can be used as an implantation mask. It appears that the process would be performed equal well with such a modification and that the modification does not solve any stated problems or have any advantages. Japan '028 does not disclose the pressure of oxidation. The examiner takes official notice that pressures within the ranges recited in claims 18 and 19 are employed in LOCOS processes. It would have been within the scope of one of ordinary skill in the art to employ such pressures to allow oxidation to be performed. It would have been within the scope of one of ordinary skill in the art to determine a suitable opening size between the spacers which choice would depend on the desired device density and degree of isolation on the finished wafer. Removal of the pad oxide layer in the opening would be a matter of choice as the oxidation could be performed equally well in either event since the oxide would be reformed in the initial stages of oxidation if removed.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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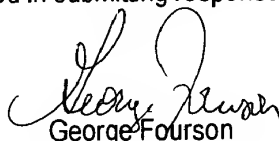
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0661. **See MPEP 203.08.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner George Fourson whose telephone number is (703) 308-2544. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling, can be reached on (703) 308-3325. The fax number for this group is (703)305-3599. MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.

  
George Fourson  
Primary Examiner  
Art Unit 1107

George Fourson  
October 11, 2000